

## JIG DESIGN

rounded so that dirt or chips cannot lodge on them and cause faulty locating. The pin *D* simply acts as a stop for locating internal bosses on the work; and feet are provided at *B* so that the jig casting can be set up on this end for loading purposes. A swinging clamp *J* is provided at the open end of the casting and this clamp is provided with a rocker *G* which pivots on pin *H*; slot *K* being cut for its reception.

A swinging clamp-screw is located at *L*, which works in slot on the end of the clamp *J*, the nut and washer at *M* being used to draw it up firmly. An equalizing action is obtained this manner on the swivel *I*, so that pressure is equally distributed on the end of the casting. As it was necessary during the machining of this piece to use several sizes of tools and work from both sides of the casting, it was found advisable to use liner bushings *P* in order to prevent undue wear. These bushings are hardened and ground, and forced into position and the slip bushings *Q* are slotted to receive the pin *R* to prevent them from turning. The steel studs *N* and *O* on opposite sides of the jig body are ground to a uniform surface and act as feet for the jig. In connection with this jig it is well to know that all parts subject to wear are readily replaceable, thus making the life of the jig almost indefinite.

Indexing Fixture for a Clutch Gear. — In every kind indexing mechanism one of the chief points in design is to prevent variations in the spacing due to wear on the mechanism. The fixture shown in Fig. 3 is so arranged that wear on indexing points is automatically taken up by the construction of the device, so that the provision made for its upkeep is excellent. In addition to this feature, the design is not very expensive and it may be made up at much less cost than many other kinds of indexing devices. The work *A* is a clutch gear, the hub portion *B* of which is to be machined in this setting. As the work has been previously machined all over, it is necessary to work from the finished surfaces.

The body of the fixture *G* is of cast iron and it is provided with two machine steel keys at *P*; these keys locate the fixture on the table by means of the T-slots, and the hold-down bolt *Q* locks it securely in position. The revolving portion of the